The Focus

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The focus

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JANUARY - 1931

To Students and Alumni

Greetings:

The privilege of delivering a personal message through the medium of this student publication, is one for which I am deeply grateful. I shall first address myself to graduates. You, who through the years, have gone out from our college to make your mark in the world of professional optometry, have a high place in our thoughts. Some of you have achieved success to a degree that makes us very proud: Conducting large practices, serving as officers and directors of state and national associations, wherever and whoever you may be, we point to you with pride and with gratification. Your Alma Mater invites you to pay us a visit in order that you may have your hopes renewed and your courage inspired by the manner in which we have kept faith with your profession. Old N. I. C. welcomes you.

To the under-graduates: Of all who have any relations with optometry, you are to be most envied. You are literally deluged with opportunities to gain that which men hold priceless, knowledge. If those who have preceded you were to offer their counsel, they would plead with you to learn more, and more! and more! Sound theories, proven by others, are such invaluable aids to successful practice that no labor required in mastering them, can be too great. Today's graduates must know more about optometry than at any previous time in history and this will be increasingly true through the years. As we are able to add to the sum of knowledge, so must an ever increasing responsibility rest upon student body and faculty. I, therefore, felicitate you and ask you to join with me in pledging to the world our finest effort for 1931. May it prove for us all our happiest and most successful year.

William B. Needles.

S T A F F

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EDITORIALS

OPTOMETRY A PROFESSION?

Here is a question that has been disputed continuously since the birth of Optometry. It still remains a question in the minds of many, even in the minds of those who most desire a professional Optometry. To all appearances, progress along the lines of an absolute decision is at a standstill at this critical stage in the development of the profession. It is as though Optometry were on the fence, figuratively speaking. It is a question whether Optometry will become a most lucrative business with business methods and business ethics practised throughout or a true profession, secure in its position among the others.

The decision, as always, rests with the individual practitioners themselves. They must provide the proper background of ethics that will raise the standards to such a degree that students entering will have some base from which to start. They must submerge themselves in their profession. Without their example it is hopeless to expect a newcomer to proceed along professional lines. The present day State Boards are doing much to exclude those who, by reason of insufficient knowledge, lack of background, and unfavorable appearance, are unfit to enter into the profession.

The thought we would like to leave with the members of the graduating class in particular is best expressed in the words of W. A. Shumaker, Editor of Law Notes, in answer to the question of what makes a profession. We can do no better than keep them constantly in mind. "If there is such a thing as a profession as a concept distinct from a vocation it must consist in the ideals which its members maintain, the dignity of character which they bring to the performance of their duties, and the austerity of the self-imposed ethical standards. To constitute a true profession there must be ethical traditions so potent as to bring into conformity members whose personal standards of conduct are at a lower level, and to have an elevating and ennobling effect on those members. A profession cannot be created by resolution or become such overnight. It requires many years for its development, and they must be years of self-denial, years when success by base means is scorned, years when no results bring honor except those free from the taint of unworthy methods."

RETROSPECT

In the last stages of our school life at N. I. C., we can look back over the busiest two years of our lives. Two years spent in the study of new subjects, in the making of new friends, in meeting strange and varied cases. Two years spent under the tutelage of the best men Optometry has ever produced and receiving from them our first notions of the birth of the profession and of its future. Two years in which to prepare for a life's work, to make new associations, to engage in the varied activities of school life. Years packed with action and events; yet withal so busy, short years in which to have formed the lasting impressions that will influence us so greatly in the future.

FOCI

In institutions for training the blind the pupils are taught a great deal about light. Reflection, refraction, the spectrum, the ether theory etc., are all studied.

Whenever we hear a woman say that all men are alike we can't help but wonder how she found out.

In China it is considered an insult to the teacher if a student wears glasses in his presence.

Woman will be as good as whiskey — when they learn to improve with age.

Sailors of the U. S. N. are not allowed to wear glasses on board ship, though the engineers below may do so.

Our idea of a good girl is one who walks in her sleep everytime she dreams of an automobile ride.

It takes sixty-three muscles to frown and only thirteen to smile.

A man doesn't mind seeing spots before his eyes, especially if they're five and ten spots.

Tortoise-shell rimmed glasses were considered conducive to good fortune and long life because the tortoise was believed to be a sacred animal.

Some girls proclaim their beauty from the hose tops.

———

It is said that light passing obliquely from a dense to a rare medium bends away from the normal. Did you ever stop to wonder why light passing from the crystalline lens u 1.43 to the vitreous u 1.33 continues to converge. Think it over.

———

Our patented method for extirpating fleas from dogs: Immerse subject in alcohol, then apply sand liberally. The fleas will become so intoxicated they will kill themselves throwing rocks at each other.

———

We agree that an undertaker must have a pretty sensitive conscience if he can't sleep because he put a tight pair of shoes on a corpse.

———

Up to 1930 more than thirty-nine different glasses of essentially different optical characteristics have been discovered.

———

All this propaganda about birth control is merely an attempt to avoid the issue.

———

Then there's the Scotchman who wanted to smoke monogramed cigarettes so he changed his name to Chesterfield.

———

An owl's eye occupies one third of the entire head.

———

College is largely a matter of give and take. Give money and take examinations.

———

Money doesn't attract all women but it certainly gives a large variety to choose from.

———

95 per cent of the time spent in reading is used in refocusing and shifting from line to line.

———

Our observations show us that the hardest school for a fellow to go through is Vassar.

After a cataract operation the cornea does not become astigmatic until the aqueous is replenished.

———

All students should be required to write the date on their papers in the coming examinations so as to make sure they have something right.

———

To discover whether a flivver is male or female tell a joke. If he laughs its male. If she laughs its female.

———

A pinhole pupil in an animal is a sign of rabies.

———

Never eat the raisins off the fly paper.

———

A parasite is a person who goes through a revolving door without pushing.

———

Investigation has shown us why it takes a woman longer to dress then a man—she has to slow down at the curves.

———

At 5 meters red is recognized 10 times easier than violet.

———

Another point worth noting is the tack on the chair.

———

Getting out a magazine is no picnic.

If we print jokes folks say we're silly.

If we don't, they say we're too serious.

If we publish original matter, they say we lack variety.

If we publish things from other papers, we're too lazy to write.

If we stay on the job, we ought to be out rustling news.

If we're rustling news, we are not tending business in our own department.

If we dont print all contributions we don't show proper appreciation.

If we do print them, the magazine is filled with junk.

Like as not some fellow will say we swiped this from an exchange.

So we did.

Compliments of

DR. J. I. LUCEY

FIVE SOUTH WABASH AVE.

CHICAGO

Compliments of

DR. SAMUEL D. GINSBURG

Suite 400 Monroe Building

104 South Michigan Avenue

Chicago

Best Wishes

DR. HARRY J. BYLAN

Compliments of

DR. HARRY C. PAUL

Diseases of the Eye As Related to Refraction

By Thomas G. Atkinson, M.D., D.O.S.

Many ocular diseases give first evidence of their presence by relatively slight disturbances of vision, and are frequently discovered in the course of a refraction test. In any event, the presence of an ocular disease presents to the optometrist something more than the mere question of referring the case to an oculist or a medical man for treatment. There still remains the optometric aspect of the case, the correction of refractive and muscular errors, which offers a variety of problems. Is the disease impairing vision, or is the visual error aggravating the disease? Will correction of the error help the pathological condition, or hurt it? Shall he correct it now, or wait until the disease is cured? Are there any other optometric measures, aside from sheer visual correction, which might be of benefit? And so on.

As a guide to the solution of these problems, we may divide ocular diseases into two main classes: (1) Those which impair vision, and (2) Those which do not impair vision. Let us briefly consider them in reverse order.

DISEASES WHICH DO NOT AFFECT VISION

Naturally, this class of diseases are those which attack those parts of the eye that are not concerned in the act of vision, but are confined to what may be called the appendages of the eye,—the lids, the conjunctiva, the sclera, the tear-ducts, etc.

However, while these diseases do not affect vision, it by no means follows that poor vision does not affect them. Some of them are at least aggravated by eyestrain due to refractive errors. So we must subdivide these diseases into two sub-groups:

(a) Diseases which neither affect vision nor are affected by it.

(b) Diseases which do not affect vision, but are themselves influenced by poor vision.

In the first group are included all the acute diseases of the eyelids and the conjunctiva, diseases of the sclera (scleritis and episcleritis), and those of the tear-duct (dacryocystitis).

None of these diseases have anything whatever to do with vision, either as a cause or as an effect. The patient may or may not need glasses, but he does not see poorly because of the disease, nor will glasses help the disease. On the whole, therefore, it is better to refer such cases to the oculist to be cured before attempting to refract them, or to give them optometric treatment of any kind.

In the second group are comprised the chronic and recurrent diseases of the conjunctiva and eyelids, conjunctivitis, blepharitis marginalis, hordeolum (stye), meibomian cyst, phlyctenular conjunctivitis, eczema of the lids, etc. None of these affect vision, but all of them are aggravated, if not actually precipitated, by eyestrain due to refractive errors and muscular troubles. Every such patient, therefore, should be corrected, and proper glasses or muscle treatments may be relied upon to help materially in getting rid of the chronic diseased condition.

DISEASES WHICH IMPAIR VISION

These diseases may be subdivided according to the way in which they interfere with vision, as follows:

(a) Those which produce corneal or lenticular opacities.

(b) Those which render the humors cloudy.

(c) Those which affect the retina or choroid.

(d) Those which disturb intra-ocular relations.

In the first group must be reckoned chronic keratitis, corneal ulcer, pterygium when it extends over the cornea, entropion in which the lashes scratch the cornea, trachoma, and cataract. In one of these conditions is it possible to influence the disease itself by means of glasses, yet in all of them refraction has a helpful part to play. Corneal diseases almost always cause some degree of astigmatism, which can often be helped by properly fitted cylinders. In the early stages of cataract much useful vision can often be obtained and preserved for quite a long while by careful refraction of the eye, changing the glasses as needed from time to time. After extraction of the cataract, of course, it becomes the duty of the optometrist to fit the eye with corrective lenses. Final refraction, by-the-way, should not be undertaken until several weeks, or even months, after the operation, so as to permit the eye to "settle down" to its permanent refractive state.

In the second group are all the inflammatory diseases of the internal eye, notably iritis, irido-cyclitis, and uvetitis. These always impair vision very markedly. The fact that they do so, together with the ciliary type of injection, will differentiate them from simple conjunctivitis. Refraction will do no good in such cases, and should not be undertaken until the diseased condition has been cleared up as far as it can be.

The third group includes all retinal and choroidal inflammations and degenerations, optic neuritis, optic atrophy, toxic amblyopia, and arteriosclerosis. None of these derive any help, directly or indirectly, from the correction of refractive errors. However, if a refractive error exists, there is no reason why the patient should not be given his proper correction to the best of the optometrist's ability. But such correction will not influence the disease in any way. The wearing of anti-actinic lenses will often give some relief, and perhaps retard the development of ordinary degenerative diseases of the retina or choroid.

The fourth group may be summed up in the single term, glaucoma. Anterior and posterior staphyloma may be regarded as complications of glaucoma. Posterior staphyloma calls for minus lenses, which must be fitted very carefully, and changed from time to time as the disease progresses. Anterior staphyloma, unhappily, admits of very little in the way of help. In these cases nothing can be done by glasses to remedy the diseased condition itself. They cry aloud for medical help. However, even in these conditions the optometrist need not throw up his hands and remain helpless and inert. Skillful refraction often affords these patients invaluable comfort and relief; especially as they usually have to live with their diseased condition all their lives, and anything that yields them comfort is worth while.

WHY PEOPLE ARE HYPEROPIC

By J. C. Copeland, Opt. D.

There has been advanced in the last century such a vast number of theories as to the causes of hyperopia that it seems almost impossible for me to be in the least original. Therefore, in writing this article, I do not wish to assume that all the facts, as stated therein, are directly results of my own thoughts. I have attempted, in a few cases, to describe those which I believe probable and which, as yet, have not been advanced as theories.

In order to clearly define the subject of this treatise, I desire to differentiate in the minds of the readers between that which *constitutes* hyperopia and that which *causes* hyperopia.

That which actually *constitutes* hyperopia we are all familiar with and may be stated as:

1. Shortness of anterior-posterior axis.
2. Diminished convexity of cornea or lens.
3. Low refractive index of media.
4. Absence of crystalline lens.

Those conditions which account for or explain *these* facts are the causes of hyperopia.

Therefore, to be strictly within the confines of the subject, I must get to the essence as to what really *constitutes* the *causes* of hyperopia.

Hyperopia, by far, is the predominant refractive condition of the human species. As might be expected, little is known of its existence in primitive man. The only method by which we can approximate his condition is by the study of the orbital construction of the skulls found in various parts of the earth and which presumably belong to this type of man. By the nature of his labors and methods of sustaining life, he must have been farsighted. I assume this since it has been discovered and investigated that refractive conditions in other animals are adjusted to their environment and to the nature of the use of their eyes, whether for far or near. As an example. it has been shown that a slight grade of hyperopia is present in most domestic animals.

Of course, there are exceptions to the above facts just as we find exceptions to them in man. Nevertheless, it seems reasonable to believe that since we are able to correct this refractive condition within certain limits by our positive accommodation, this condition within these limits exists in predominance to all other refractive conditions, and man's eyes are used for long distances; God had intended man to be hyperopic. He had fitted us with eyes adapted to our needs on earth. Could this not be termed a spiritual cause?

This spiritual cause can be taken as a primary cause for the various physiological intra-ocular and extra-ocular manifestations which play an important part in finally causing hyperopia. These are principally mechanical and will require little imagination on the part of the reader to visualize.

Numerous craniologists have made careful studies of the various types of skulls and have systematically arranged a set of cranial measurements whereby these skulls may be classed into three types:

1. Long or dolicho-cephalic heads.
2. Medium or meso-cephalic heads.
3. Broad or brachy-cephalic heads.

Together with these divisions, a unit of measurement for the orbit was established, termed the "orbital index." To simplify matters, all that need be remembered is that a low index indicates a low orbit and small orbital capacity, while a high index indicates a high orbit and a high orbital capacity.

A very marked relationship was found to exist between the type of skull and the orbital index. It was ascertained that the orbit is low in the long skull, a bit higher in the broad skull and exceeds in height of both the other forms by a very important measurement in the medium skull.

These differences in the shape and size of the orbit, as found in various skulls, have a very important effect upon the refractive condition of the eye. As we are only concerned with the one condition of hyperopia, I shall attempt to confine myself only to those orbital conditions relative to it.

It must be remembered that the eyeball is not totally resistant, that it does admit of some compressibility and, because of this, its shape may be altered by some internal or external pressure. It must also be understood that the bones of the orbit will not adjust themselves in their development to the contained globes, but the globes in their development must adjust themselves to the bony walls.

What happens then when the cranial development is such as to give a high orbital index? The greater the orbital index, the greater the height and capacity of the orbit, thus permitting the eyeball to develop and grow with a great equatorial diameter. This simultaneously draws the anterior and posterior poles towards each other and should development in the equatorial plane assume too great a diameter, there results a condition of hyperopia.

Stilling, Weis and other authorities believe that a high orbital index predisposes to myopia and that the orbital capacity is always greater in hyperopia than in myopia. It has also been said that in a high orbit there is less compression of the globe by the superior oblique muscle. This would lessen the tendency for elongation of the globe which usually occurs with a strong muscular tension.

An interesting fact, as shown by Weis, is that the orbital index is much greater in infancy than in adult life; that in most all cases the infant is born with a high orbit which tends to decrease in height as the cranium undergoes development.

By inverse reasoning, what then must we assume to be the refractive condition of most infants? Hyperopia. of course, and this we know to be a fact. Should the cranial development not sufficiently decrease the orbital index, the adult will be hyperopic. We thus have an answer to the question, "Why are some persons born, and grow up, with hyperopic eyes?"

A source of pressure upon the globe that would in certain instances affect the refractive condition is the very slight incompressibility of the orbital fat. It is true that

under normal conditions the pressure behind the eye is not sufficient to materially change its length. Stevens thinks that "the pressure of the tissues at the inner side of the eyeball may be so diminished or augmented as to affect to a certain extent the relative tension of the inner muscles." If this is true, then a condition that would result in less tension of the muscles would also have the effect of decreasing the compression on the globe by these muscles, thus permitting a shorter anterior-posterior length. Stevens says that "while it is true that in normal conditions there are no important transient changes in the volume of the cushion against which the eye rests and in which it performs its rotations under certain circumstances of disease or emaciation, the amount of pressure behind the eye may be materially modified." We can readily see that a pressure from behind forward would cause a hyperopic condition.

By an unusual tension of the oblique muscles in their attempt to correct certain phoric conditions, and otherwise, the eyes may be forced forward so as to assume a position of conspicuous prominence. This causes the globe to be pressed against the projection of the supra and infra orbital ridges, causing a decrease in its length. It should be understood that the attachments of these muscles are not the same in all eyes. Should their tendons be inserted both into the posterior inner and outer quadrants of the globe, the pull forward would be much greater than if they were inserted into the posterior outer quadrant only. Fuchs found that this latter attachment does exist in most myopic eyes, while the former exists mostly in hyperopic eyes.

A theory originated by myself and which I believe not to be improbable, is the effect of the hydrostatical pressure within the eyeball itself upon the varying thickness of its walls. By hydrostatical pressure within the eyeball we mean every area of equal dimension in the eye is subjected to the same amount of pressure by the humors. Should the area around the equatorial diameter of the wall of the globe be thinner than other parts of the wall, there is less resistance to the internal pressure as compared with the thicker parts. This will cause the eyeball to assume a greater diameter in the equatorial plane, thus drawing the anterior and posterior poles towards each other. I believe this is quite the case in a majority of hyperopic errors. This condition, of course, is dependent to a certain extent on the extra-ocular pressures exerted by the walls of the orbit, the orbital fat and the external muscles.

During the embryological development of the eyeball the anterior-posterior diameter is always the shortest. This condition is mainly due to the shape of the orbit during the development of the foetus. But I also believe that two other conditions might assist in this phenomenon: first, the forward growth of the stem or stalk of the optic nerve from the cerebral vesicle forward might have the effect of pressure against the back of the globe; second, the connection of the hyaloid artery to the lens might tend to inhibit the growth of the globe in this direction. I wish to state that these conditions might exist, although I have no proof for them. Disregarding the *cause* for the eyeball being hyperopic in its embryonic development, the fact remains that *this* condition in the embryo predisposes to hyperopia in the infant.

In the preceding paragraphs I have attempted to describe the modus operandi by which certain manifestations bring about the shortening of the anterior-posterior diameter of the globe. The causes for the other conditions which constitute hyperopia, as stated in the forepart of my article, can be more briefly described.

A diminished convexity of the cornea is due principally to a tension across the anterior part of the eye caused by the tendency of the globe to increase its equatorial diameter under certain conditions as described before. As a change of only one millimeter in the radius of curvature of the anterior surface of the cornea creates a variation of six diopters in the refracting power of the eye, it can readily be seen that it only requires a very slight tension to sufficiently flatten the cornea and cause hyperopia.

A diminished convexity of the crystalline lens might be caused by one of two conditions. First, a tension of the suspensory ligaments when the ciliary muscle is relaxed. Second, a tendency for the lens to lose its elasticity due to a hardening process which progresses with age. This hardening of the lens is the result of a decrease in the amount of water in its substance. Since both surfaces of the lens are refracting surfaces, either of the above two conditions, existing in the smallest degree, would greatly affect the power of the eye.

There is not much to describe as to what would create too low an index of refraction in the cornea, aqueous, lens or vitreous, except to say that it is due to a chemical variation or change in the elements which compose the media. We know that a difference in the chemical constituents of glass is what causes the different indices of glass. Therefore, any condition that would create these differences in the eye media would change their index.

Aphakia, or absence of the crystalline lens, is always the after result of certain pathological conditions, principally cataract. This is most generally an acquired condition but it has also been known to be congenital. If this congenital cataract is removed and, as we know, does create a hyperopic condition, would it not be logical to say that the child was born hyperopic? Cataract, without regard to origin, is an indirect cause for hyperopia.

Another condition that is in reality an absence of the lens is a partial or total dislocation of the lens. This is caused by a rupture of the lens capsule or suspensory ligaments. It is an acquired or congenital condition.

We come now to another phase of this subject which is wholly different in its logic from those previously stated. It is the hereditary cause.

For ages and ages past, even before the principles of evolution and heredity were established as facts, there were certain beliefs more or less of a superstitious nature, very similar to the beliefs of heredity today.

People noted in their offspring the likenesses of their bodily and facial contours. They even noted that certain deformities in various families are hereditary.

We who are engaged in eye work know that no face or

form of any living being is geometrically regular or shows other than a curved configuration of its surfaces. These variations which actually occur in the living species strongly tend to become hereditary, if the causes of the variation be continued. This influence exists and existing, must be the source of the numerous anomalies of the eye, particularly hyperopia, to which neither reason nor research furnishes any other clue. Truly, the shape of the orbit and other manifestations I have mentioned can have as their elementary cause that of heredity.

We cannot limit ourselves to those causes that I have cited as the only causes for hyperopia, but I do believe that I have covered those which are most important and most commonly accepted.

SCHOOL NOTES

SENIOR CLASS

The Senior Class held its first meeting on Oct. 3, 1930 and elected officers as follows:

President—James K. Finley, Chicago.
Vice-President—William A. Labron, Xenia, Ohio
Secretary—Miriam A. Walker, Chicago.
Treasurer—L. Welton Backus, Detroit, Mich.

At subsequent meetings, the question of clinic uniforms was discussed and through the efforts of Kwas, chairman of the committee appointed to look into the matter, the uniforms were procured on Oct. 10. At a later meeting it was decided to hold the graduation exercises at St. James Church, 46th and Ellis. Other details concerning the graduation exercises were brought up at the same meeting.

JUNIOR CLASS

Junior Class officers were elected at a meeting held on Oct. 10, 1930. They are:

President—Charles J. Murphy, Cleveland, Ohio.
Vice-President—Leroy R. Goulding, Sterling, Ill.
Secretary—Frank E. Stoll, McCook, Neb.
Treasurer—Lawrence J. Richard, Detroit, Mich.

SOPHOMORE CLASS

The following men were elected officers of the Sophomore class:

President—Howard J. Bruhy, West Bend, Wis.
Vice-President—Cecil M. Higginbotham, Liberty, W. Virginia.
Secretary—Russell R. King, Chicago.
Treasurer—Milton H. Bursack, Jamestown, No. Dakota.

FRESHMEN CLASS

Officers of this class are:

President—Roger W. Alford, McComb, Missouri.
Vice-President—Earl H. Good, Hutchinson, Kansas.
Secretary—Princhas DeVere, Indianapolis, Indiana.
Treasurer—William M. Sidwell, Cape Girordeau, Mo.

As befits our largest and most active class, the Freshmen fostered a dinner and dance at the Via Lago on Dec. 12th. It was attended by upwards of thirty-five couples, who danced to the strains of Jimmy Garrigan's orchestra and afterwards enjoyed the excellent cuisine featured by the restaurant. Dr. John A. Ross of the Faculty was present as guest of honor. Robert Levy was chairman of the dance committee and, with the aid of the toastmaster, Roger Alford, the evening was declared an unqualified success.

BASKETBALL

The N. I. C. basketball team opened their regular schedule with a 41 to 31 victory over the Hyde Park Baptist quintet in a torrid tilt at the St. James M. E. gym on Thursday night, Jan. 8.

Though never in any great danger the N. I. C. defense seemed to falter enough during the second and third stanzas to allow the opponents to run up about 20 points before they resumed their earlier pace. The fine defensive work of Fahrbach and Murphy was a vital factor in stemming the scoring spell of the opposition.

The team's passing attack showed the effect of the intense drilling instituted by Coach Cross. He has two promising prospects in Elson and Peterson who scored 16 and 8 points respectively. Schmidt looks like the goods at center.

The outlook for the rest of the season is rather rosy as none of the first stringers leave in February.

This year the team has entered two leagues, the Chicago Professional School Conference and the South Side Church League. Each promises plenty of worthy opposition and the going may be a little stormy but after the proficient Cross smooths out the rough spots we feel confident the "N.I.C.'s" will end up on top of the heap.

The games are played every Monday and Thursday nights at the St. James M. E. Church, 46th and Ellis Ave.

The attendance thus far has been disappointing. If it will serve as an inducement to any, we announce that all games are gratis, in other words free. Let's see all you Myopes, Hyperopes and Astigmats fill the hall next game. We feel sure the boys would play much better ball with our Fair Frosh present. The team can always count on two loyal supporters anyway, i.e. Prof. Occhy and Mrs. Sawyer. We weren't aware that we had a cultured coloratura at that front desk until we attended that last game. With each N.I.C. score she emitted a whoop that made Galli Curci sound like a fish peddler.

The team record so far is 4 victories and 1 loss.

No doubt the flapper's heart beats are often mistaken for a call to arms.

Doctor:—Your boy's eyes are not diseased. All he needs is a little soap and water.

Anxious mother:—Before or after meals, Doctor?

MEASUREMENT — TAKING and ADJUSTING

By H. E. PINE, Opt.D., Chicago

I intend this paper on measurement taking and adjusting for beginners, and it shall treat of practice, not of theory. I hope that it will be so clearly expressed and so free from technicalities that he who runs may read, and he who reads may thoroughly understand, and thereby gain as much knowledge of the work as it is possible to derive from a text. The average reader will, no doubt, find in it many items of information with which he is already familiar, and many explanations which he does not require; but experience with numerous students of all ages has proved that however obvious a fact may seem to be, there is always someone who is ignorant of it, and it is better that ten persons should hear an explanation for the second or even the third time, than that one person should lack it altogether.

It has long been the opinion of the writer that measurement taking and fitting and adjusting of frames and mountings is not given the very important place that is justified, in the attention of the vast majority of optometrists and opticians.

To deliver the most satisfactory service in optometry it is not enough simply to examine the eyes and arrive at the proper prescription. The patient must be furnished with a mounting or frame which will hold the lenses in the proper position before the eyes. It should be attractive in appearance and durable.

Many patients have their own views as to the sort of frame or mounting they desire, and unfortunately their choice is not always a wise one for their individual case. If it is impossible, as will sometimes be the case, to convince them that some other style would give better results, furnish them with whatever they think they want, explaining to them that the responsibility is their's, and make a notation to this effect on their record card. It will occasionally happen that a person will later disclaim all responsibility, should it prove unsatisfactory.

The importance of proper frame-fitting is one which the writer believes would be difficult to overstress, as we so often see a good correction ruined by being improperly placed before the eye. If the glasses are not comfortable, the patient is dissatisfied, regardless of the cause.

Eight Dimensions to Take

In taking facial measurements, remember that there are eight dimensions without which properly fitting glasses cannot be made:

(1) Pupillary distance, *i. e.*, the distance between the centers of the pupils.

(2) The size and shape of the lenses.

(3) The height of crest, which is measured from an imaginary line drawn horizontally through the centers of the pupils to the lower edge of the crest of the bridge.

(4) The angle of crest, which is the angle at which the crest of the bridge subtends the plane of the lenses.

(5) The width of base, measured between the inner lower points of the bridge where they cease to touch the nose.

(6) The length of shank measured by placing rule across the nose and viewing from the side. If the lashes are in back of the plane, regular shank will clear the lenses. If the lashes are "on line" with the ruler use long shanks. If the lashes extend beyond the rule use extra long shanks. The regular shank will place inner surface of flat lenses one and one-half millimeters closer to the eye than the crest of the bridge. Long shanks will place the inner surface of flat lenses on line with the crest. Extra long shanks will place the inner surface of flat lenses one and one-half millimeters further from the eye than the position of the bridge crest. It should be remembered that a toric or meniscus lens will allow the use of a shank the next shorter length than would be possible with the flat lens.

(7) The angle at joint, *i. e.*, whether at right angles to the front of the frame or tilted for reading or other purposes.

(8) The length of temple, measurement taken in a straight line from the inner surface of the end piece joint to the top of the ear and adding two inches.

In measurement-taking it is best to follow a regular plan, taking the dimensions, one after another, in the same order each time, so that nothing will be overlooked. Trial sets of frames are furnished by wholesale prescription houses, but their use is not favored by the writer, for just as exact work can be done by taking the proper measurements and the feeling is given the patient that a frame is being made to order and he is not being fitted with a "hand-me-down." For the same reason, the writer has practically all bridge-bending done out of sight of the patient, leaving only such small finishing touches as cannot well be done except at the time of delivery.

For glasses to be worn for distance vision, have the patient look at a distant object when the pupillary distance is taken. The rule should be held resting upon the patient's nose, the upper edge of the rule just below the line of the pupils, with the zero mark on the rule at the inner edge of the pupil of the right eye. Then note the point reached by the outer edge of the pupil of the left eye. In taking this measurement, the optometrist should view the patient's right eye with his left and *vice versa*. If If glasses are being fitted for close vision only, the pupillary measurement should be taken at the distance at which the near work will be held. In single lenses which are to be worn constantly it is, of course, impossible to have the pupillary measurement proper for all distances, and in such cases it is the practice of the writer to adjust minus corrections at the near P.D.; as in orthophoria, the prism resulting in lenses which are improperly cen-

*Reprint from *Optical Journal and Review*.

tered, can best be worn when the base is in, which would be the case when adjusted according to the above rule.

Size and Shape of Lens

In arriving at the proper size of the lens to be prescribed, it will be necessary to get the lens length by deducting the width of the nose from the pupillary distance. If long or extra long shanks are used, it will not be necessary to allow the full width of base, as it will be possible to bend the shanks and to use a lens about three millimeters larger than would otherwise be possible. It is the custom today to use so-called "short oval" lenses rather than the regular, and the usual dimensions of the lens is about four to six millimeters different in width and length.

In choosing the lens shape, the purpose of the lens must be kept in mind, and a shape prescribed which will harmonize best with the type of face. A patient having a high, arched eyebrow looks best with an oval lens following the arch made by the brow. The leaf-shaped lens is used to avoid overhanging brows and in cases where the brow has little or no arch. The leaf is also of value where it is desirable to obtain a larger field below the optical center of the lens than above it. Care must be taken, when using a leaf-shaped lens, to see that the lower edge of the lens does not rest upon the cheek.

The Bridge Measurements

The matter of crest height and angle is of primary importance, as the greatest cause for discomfort exists here. If the angle of crest is too great the bridge will rest on its lower edge and, in a short time, will cut like a knife. Of course, the heavier the lens the sooner the trouble will develop. If in any doubt of proper angle, when writing the bridge prescription, order too little crest rather than too much, because while the fit may not be perfect, it is unlikely to cut along the upper edge of the bridge unless the temples are far too tight, in which case it would probably cause trouble anyway. The normal angle of crest is 45 degrees, and bridges are so furnished by wholesale houses unless otherwise ordered. This will be found to set comfortably on a large percentage of noses, and will give reasonably good results even though the angle might vary five degrees either way.

In taking the width of base it must be kept in mind that the base of bridge must be measured at a point lower on the nose than the place where the crest will rest in all cases where there is any height of crest necessary. Otherwise, it will be found that the base has not been made wide enough and the base of the shanks will dig on the sides of the nose. If the base has been made too broad, the bridge will rest with its entire weight on the small spot on the top of the nose. In a bridge that fits properly, the contact is even, over the entire surface of the bridge, and should leave little or no mark after having been removed for a few moments.

The shank should be no longer than is necessary to permit lenses to miss the lashes, as glasses are less conspicuous when fitted close to the face. It also must be remembered that a plus lens which gave satisfactory vision at the time of the examination may prove too strong when adjusted at a greater distance from the eye than were the lenses in the trial fra Minus lenses, of course, would be affected in the oppo

In case a shank, longer than the 'e g," is required, the result may be obtained by usi the bridge next wider in base measuremen and by rolling or lengthening shanks. Do not attempt to use for this purpose, a plier with a sharp edge, as it will result in scarring the material, and a nicely rounded turn cannot be obtained. When in doubt as to whether a certain shank will be long enough, the writer makes a practice of using the shorter shank, as it is much more satisfactory to lengthen a shank than to attempt to shorten it.

Many cases will be found where there is a marked difference in the two sides of the face, *i. e.*, where the eyes are not a like distance from the center of the nose and this must be allowed for in the adjustment of the shank. A good plan to adopt in order to obtain the exact P. D. is to dot the optical center of each lens in the assembled spectacle or eye-glass and, by covering each eye separately, one can readily see whether or not the dot centers in the pupil. Wax crayon pencils in several colors can be obtained from any wholesaler The writer prefers the white pencil, as the dot shows much better against the dark pupils.

It is important to have the proper angle in the joint, or end-piece, as the most careful bridge adjusting can be set at naught by an end-piece joint which holds the spectacles at an improper angle on the nose. In the average case, the end-piece will be left as it is made, *i. e.*, at right angles to the lens, when worn for distance use only. In rare cases, when the ear is unusually high on the head in comparison with the height of the nose crest, it will be found necessary to tilt the joint upward.

In fitting glasses which are to be worn constantly, the best results will be obtained if the end piece is angled so as to allow the lenses to be tilted out from the top about five degrees, while a spectacle to be worn for reading or near vision only should be tilted about 10 or 12 degrees. The exact angle for each particular case will have to be found by noting the position at which the patient holds his reading or near work, and then the end-piece should be angled so as to tilt the lens at right angles to the line of vision. This is important in any case, but is imperative when flat lenses are being worn.

Adjustment of Bifocals

A great deal of care must be exercised in adjusting bifocals in order to have them comfortable. The writer believes that most of the bifocal wearers' complaints are due, not to the "cussedness" of human nature in general, as we would sometimes like to believe, but to careless an inefficient adjustment by the optician. There is a line, a "blind space" in any bifocal, of course, but by careful adjustment this unusable portion of the lens can be placed where it is seldom noticed. It may take quite a few moments of experimenting to find this location, but it will be time well spent.

The size of the segment should depend on the size and shape of the base lens, as no size of segment will be found to give the best result in every instance. A segment two

millimeters less in height than one-half of the lens will be found to give best results in the average case, provided the distance lens is properly centered; but this rule cannot always be adhered to, as a person who holds his head unusually high will find the segment, placed according to the rule given above, to be too high, while the patient who reads with his head inclined forward will find such a segment to be too low.

It is the rule of some wholesale prescription houses to grind segments in the center (not decentered) unless otherwise ordered, while others decenter each segment one and one-half millimeters inward in the absence of the other instruction. This is another point which cannot be covered by a hard and fast rule, as the amount of decentration necessary will naturally vary with the inter-pupillary distance, and the distance at which near work is held, as of course the amount of convergence is governed by these two things. Some patients, by habit, hold their reading more toward the right (usually right-handed people) instead of exactly in front of them, while others hold their reading slightly to the left. This should be noted at the time the measurements are taken, as it may be found that the right segment should be decentered one millimeter, while the left may need a decentration of two millimeters, or vice versa, according to which side may be favored.

Care as to Temple-Length

Temple-length should be measured carefully, as a temple which is too short will cut and will also have a tendency to ride up on the back of the ear, while a temple of too great length will allow the spectacle to slip down on the nose. The exact length is of particular importance when using a "comfort" tip, as the possibilities of adjusting this sort of a temple are decidedly limited. A temple too long is to be preferred to one which is too short, as while the former may annoy, by allowing the glasses to slide, it will not be painful. Temple ends should be bent slightly upward and out from the head, so that the tip cannot imbed itself under the lobe of the ear. In the vast majority of cases it will be advisable to bow out slightly the temple, between the end piece and the top of the ear, so that it cannot cut nor leave a line upon the side of the head. If too great a bend is necessary, an extra long end-piece can be used. The extra long end-piece is five millimeters longer than the regular. The temple should not be left a symmetrical half circle, as it comes from the factory, but should be shaped to fit the back of the ear. Otherwise it will bear more heavily upon the high spots than on others. It is the habit of the writer, when measuring for temple-length, to measure back from the position of the end piece to the top of the ear, and to add to this distance two inches for the average size ear. An unusually small ear requires but one and one-half inches added, while an unusually large ear requires two and a half. This will be found to give satisfactory results.

After the spectacle has been adjusted to the face, the temples should be closed to be sure that they fold so as exactly to correspond with the long axes of the lenses. If they do not so meet they must be made to do so; otherwise the spectacle will not go in the case without bending the temples out of their proper adjustment. To obtain the proper alignment, it is necessary to twist the end-piece itself. This adjustment must be made with great care on rimless spectacles to avoid accidents.

More than 85 per cent of bridges needed will be among the Ms. and Ns., about 10 per cent Os. and the remaining will be Ls., Ps., and Qs.

In taking measurements for eyeglasses of any type, it will be necessary to take the inter-pupillary distance as for spectacles. A few fitting samples are practically indispensable, as it is impossible to tell from any system of measurements just which of the several guards grip the nose with comfort and security without trying them.

Adjusting the Guards

There are hundreds of different guards manufactured, but the average adjuster will, after a time, adopt a very few of this number and will confine his fitting to these. There are good reasons for this plan, as it simplifies stock-keeping for the optometrist who carries his own stock and also, by constantly using the same guards he becomes more familiar with them and consequently more expert in their adjustment. The so-called sanitary guards are favored by the writer, as those with the corrugated surface will cling to the nose as firmly as those covered with shell, without the possibility of the shells becoming cracked or loosened, and permitting the rivets to irritate the nose.

The nose-piece which is commonly known as the high-spring mounting is favored by the writer, as its use permits more exact adjustment. With this type, studs or posts of different lengths may be used on the two sides when such a difference is necessary. It is also a simple matter to set the lenses closer to, or further from, the eyes by the use of inset or outset straps. Because of its construction, the weight of the lens is utilized to assist in retaining the mounting upon the nose. When using this type of mounting, it is necessary to specify the length of spring, length and style of posts and type of guards. The springs most commonly used are one and seven-eights inches, two inches and two and one-eighth inches in length. For comparison, a nose which requires an L spectacle bridge would require a one and seven-eighths spring, while a nose requiring an M or N bridge could be fitted with a two inch spring. Noses requiring O spectacle bridges would be best suited by a two and an eighth inch spring. Occasionally, it will be found necessary to use a two and a quarter inch spring on a nose which would require a P spectacle bridge.

The studs or posts are made in several lengths, commencing with AA, which takes up one millimeter; A, two millimeters; B, three millimeters, etc., to E, which is the longest stock post.

When using the fitting samples, it is not necessary to have a large assortment, as it is possible to note such changes as will be advisable from your fitting sample, so that the assembled mounting will fit properly. If the sample has a C stud on each side and it is desired to have a mounting with a narrower P. D., which will allow the use of a larger lens, a B stud can be specified with the knowledge that the resulting mounting will be a millimeter narrower on each side, or two millimeters in all.

If the two inch spring on the sample is found to be not quite broad enough, a two and one-eighth can be ordered, etc.

In almost every case it will be necessary to drill the lenses a sixteenth of an inch or an eighth of an inch above the 180 or center line, when they are to be used in this style mounting, as otherwise the lens will droop at outer edge, or, if squared up, will be held too high before the eye. Generally a distance lens should be drilled one-sixteenth of an inch up and a reading or bifocal lens one-eighth up. But of course there are many exceptions to this rule.

When making adjustments in the guards, much better work can be done by using two pairs of pliers, as by holding the guard with one plier close to the point where the guard is connected with the stud, and grasping the guard with the other, such bending and flanging as may be needed can be done without the danger of destroying the alignment of the eyeglasses in their other dimensions.

In taking measurements for the finger-piece eyeglass mounting, little can be done without a fitting set, or at least several different size mountings. It must be remembered that practically nothing can be done to alter the interpupillary distance of this type of mounting, and unless it has been ordered properly in the first place, it never can be made to fit well. The bridge should rest lightly on the top and sides of the nose throughout the entire length of the arch. The guard should grip far enough back on the nose so that the glasses will be secure, but care must be taken that the guards do not come too close to the inner canthi, or else the corners of the eyes and lids will be drawn.

Proper Angle and Height

The lenses must be held at the proper angle and height before the eyes. Wholesale prescription houses drill lenses for use in such mountings "on line" in absence of other instruction, and, as a rule, this is satisfactory, although often reading lenses will be better centered if drilled one-sixteenth of an inch above center.

If the guards do not grip far enough back on the nose they may be adjusted by lengthening the guard arm. This is accomplished by straightening out the little curve in the guard arm. In some cases the opposite adjustment will be needed, that is, the guard arm shortened by increasing the size of the little curve in the arm. This adjustment will bring the crest of the bridge closer to the nose. The guards may be angled forward or backwards to tilt the lenses before the eyes when required. Angling the top of the guard back toward the eyes and away from the bridge, will tilt the top of the lens out as for reading. It is also possible to raise or lower the lenses about three millimeters by guard arm adjustment. To raise the lenses, the guard-arm must be lowered; to lower the lenses, the guard-arm must be raised. After making this adjustment, be sure to see that the portion of the guard which rests upon the nose is reset to the proper angle.

The eyeglass frame known as the Oxford should be advised for only such patients as have high, deep and straight bridges, as the adjusting which can be done on such frames is very limited. Because of the peculiar design, the guards must be left very much in their normal position or the Oxford will not fold and catch properly. A regular lorgnette can often be furnished to women patients who have noses unsuited to the use of an Oxford.

Some Oxfords are made with solid shell or zylonite guards, and it is possible to adjust such guards by heating a flat plier over an alcohol lamp and then by applying the hot jaws of the plier to the portion of the guard to be bent, and by working slowly, as much change of adjustment is possible as working with a metal guard.

Style and Appearances

The matter of frame or mounting choice seems to have been left largely to chance; as a consequence, the result in many cases is little short of ridiculous. The idea of inflicting a pair of heavy rubber-tired, shell specs upon a person with a small face is a joke, with the patient as the butt of the joke. Glasses are more or less of a crutch at best, and should be made as inconspicuous as possible. They should not, if properly chosen, be the first thing noticed about the wearer. It is the opinion of the writer that if rims of any sort are desired and insisted upon, the rim which best harmonizes and blends with the general color scheme of the patient, should be used. A person with a dark complexion should be fitted with a dark rim, and a blond or gray-haired person would look best in a grey or crystal rim.

A long oval face will accept a round lens much better than will a round or a broad face. A person with a small face should be furnished with a lens as small as will be proper to secure the correct P. D. A person with a large face would look in better balance if fitted with a lens as large as can be used, still keeping the P. D. correct.

The wearing of glasses in the vast majority of cases adds nothing to one's appearance, but a little more care exercised by the optometrist will result in fewer choices which detract from the appearance of the wearer. It is the firm opinion of the writer that the tailor or milliner would not be able to continue in business if he or she took no more care to see that his or her output was becoming to the wearer than does the average optometrist.

WITH THE AID OF GEOMETRY

Problem:—If you have a sheet of paper, a slow pup equals a lazy dog.

Given:—A sheet of paper.

To prove:—A slow pup equals a lazy dog.

Proof:—A sheet of paper equals an ink lined plane. An inclined plane equals a slope up. A slow pup equals a lazy dog.

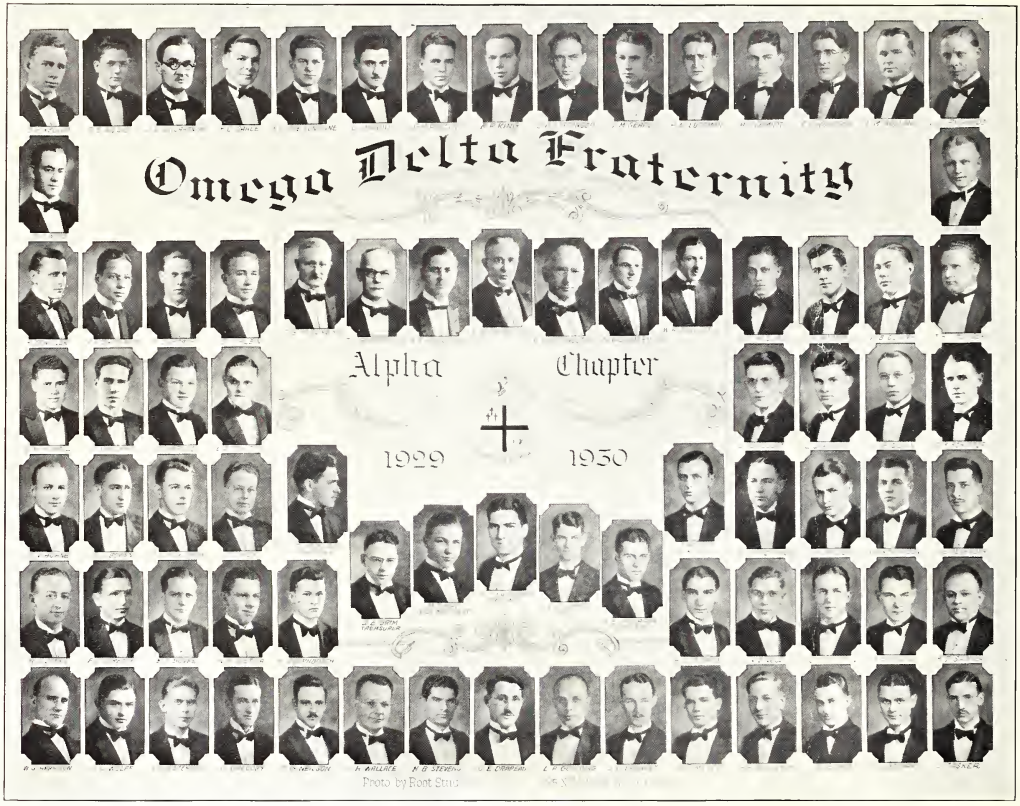
Q. E. D.

AFTER EXAMS

Passon:—Because you didn't pass don't get discouraged too easily. Set your goal and drive for it. Refuse to be stopped or turned aside by anything.

Pitcock:—Yeah, but who wants to be a truck driver.

FRATERNITIES



OMEGA DELTA

Alpha chapter, at the Northern Illinois College of Optometry, is the mother chapter of Omega Delta National Optometric Fraternity.

The chapter had its origin in a select group of post graduate students who had banded together to derive a better understanding of their research work and to instill a more profound respect for ethical and professional Optometry. This latter is the fundamental precept of the Fraternity.

This first group grew in numbers and in prestige and on May 21, 1917 articles of incorporation were filed and Omega Delta was born. So successful was the chapter that similar groups in Needles Institute of Optometry in Kansas City, Mo., and Los Angeles School of Optometry applied for membership and the National Chapter came into being with these new chapters. Later additions to the Grand Chapter are:

Delta, California College of Optometry, San Francisco, Cal.

Epsilon, Pennsylvania State College of Opt., Phila, Pa.

Zeta, Northern Pacific College of Optometry, Portland, Ore.

Eta, Missouri College of Optometry, St. Louis, Mo.

Theta, Rochester School of Optometry, Rochester, N. Y.

These eight chapters are united under the guidance of the Grand Chapter, the officers of which are chosen annually at the Omega Delta National Convention.

Alpha Chapter offers its members all the advantages of a purely social fraternity with its dances, its smokers, its banquets and all those activities so dear to the heart of every fraternity man. In addition Alpha chapter maintains a complete modern refracting room and an Optometric library in which prominent Optometrists display their various technique and lecture to the chapter.

Current officers of Alpha Chapter are:

President—J. V. E. Lennon, W. Lafayette, Ind.

Vice-President—J. C. Earhart, W. Lafayette, Ind.

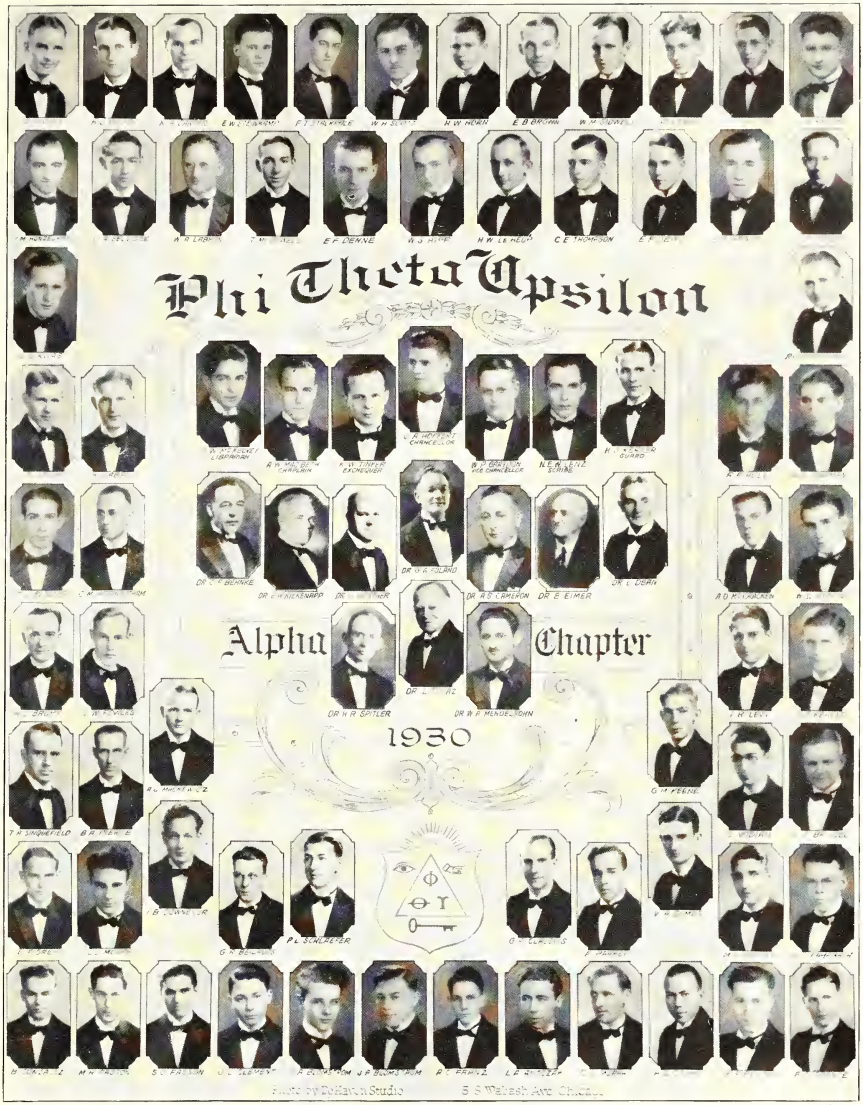
Treasurer—D. E. Denkhoff, Monticello, Iowa.

Secretary—P. A. Ludeman, Sedalia, Mo.

Chaplain—J. R. Wallace, Evanston, Ill.

Reporter—C. L. Peterson, Alexander, Minn.

W. K. I. C.—H. B. Stevens, Broken Bow, Neb.



PHI THETA UPSILON

Officers elected for 1930-1931 are:

Chancellor—John A. C. Hoffert, Grand Rapids, Mich.

Vice-Chancellor—Robert Wayne Uphoff, Madison, Wis.

Exchequer—Kenneth W. Tinker, Mt. Pleasant, Mich.

Guard—Herbert Kerker, Davenport, Iowa.

Chaplain—Thomas Beaston, El Paso, Texas.

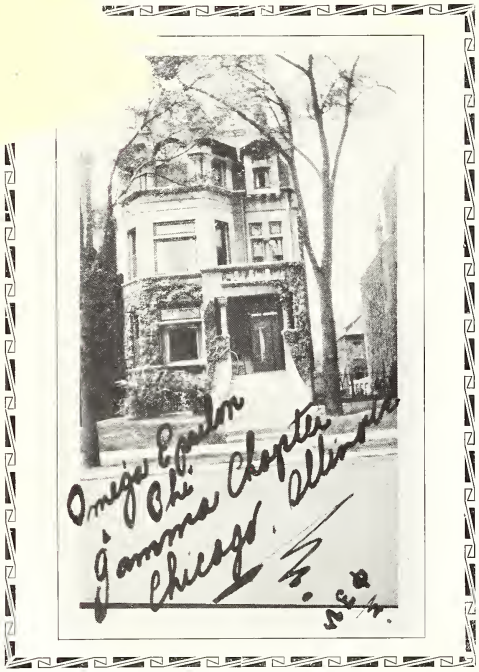
Librarian—D. W. Kelvey, Chicago.

The chapter at present has sixty-eight active members. Included among the honorary members are: Dr. A. S. Cameron, Dr. V. K. Bloomstrom, Sr., Dr. L. Dean, Dr. C. J. Franz, Dr. W. J. Heather and Dr. L. Topaz.

Within the last semester the following Passive Chapters of the Phi Theta Upsilon Fraternity have been established: Chicago, with Dr. Harry Bylan as President; Detroit, with Dr. J. Jackman, President; Dayton, Dr. L. Cline, President. These groups have been working in conjunction with the Fraternity, the Chicago chapter supplying the instruments in the Fraternity refracting room.

The Pledge Smoker on Oct. 13 formally opened the Fraternity rooms located at 4332 Drexel Blvd. The rooms are attractively furnished and present a home-like appearance. Library and refracting room are completely equipped and attract many of the Fraters in their leisure time. Sunday afternoon lectures, arranged by Dr. A. S. Cameron, are well attended.

Included among the lectures were: "Practical Points in Professional Practice," by Dr. S. Ginsburg; "Optometric Economics" by Dr. A. S. Cameron; "Ductions and Phorias" by Dr. L. Dean; "Our Fraternity" by Dr. H. Bylan.



OMEGA EPSILON PHI

This fraternity was founded at Columbia University in 1920.

In the short space of ten years, chapters have been founded in three of the leading optometric schools of the country, Alpha at Columbia University, Beta at the Rochester School of Optometry, and Gamma at the Northern Illinois College of Optometry. Gamma chapter was founded at N. I. C. in 1927.

Included among the honorary members of Omega Epsilon Phi are some of the best-known men in the profession of Optometry. They are Dr. Andrew J. Cross, Dr. Frederic A. Woll, Dr. Charles Sheard, Dr. Leroy Ryer, Dr. Elmer Hotaling, Dr. Charles F. Prentice and Dr. J. C. Copeland.

Dr. William Feinbloom, a charter member of the Alpha chapter was appointed a Fellow in the Academy of Optometric Research in 1930.

During 1930, Gamma chapter completed plans for the establishment of a fraternity house which were started in 1929. The house is located at 4244 Drexel Blvd. The chapter has accumulated over three hundred dollars worth of optometric equipment which forms the nucleus of a modern refracting room that is included in the new fraternity house.

This chapter at present numbers twenty active members. Officers for 1930-1931 are:

President—Edwin H. Robinson, Chicago.

Vice-President—Albert D. Winner, Chicago.

Secretary—Treasurer—Maurice J. Steinfeld, Paducah, Ky.

PHI KAPPA RHO SORORITY

President—Miss Virginia Cummings, Clarkesburg, West V. A.

Vice-President—Miss Miriam A. Walker, Chicago, Ill.

Secretary-Treasurer—Miss Marguerite Lalar, Chicago, Ill.

The sorority is very active socially. Several dances have been held since the opening of the school year. The outstanding affair of the season took place at the Hotel La Salle on Friday, Oct. 17. Music was furnished by Husk O'Hare and his orchestra.

Sorority meetings are held bi-monthly alternating a social with a business meeting.

Due to the efforts of this chapter, the Phi Kappa Rho Sorority is bound to grow and establish chapters in other Optometric schools throughout the country in the near future.

PARTING WORDS FROM PROFESSOR OCCHIENA

Making this contribution to the first semi-annual publication of the student body of the Northern Illinois College of Optometry calls up in my memory reminiscences of seventeen years past and my heart wells up within me.

The life of a Professor is one fraught with intermingled joy and sorrow; joy because he sees creative effort coming to fruition and sorrow because at each graduation he sees students leave the parental home.

Parental home! Yes, for the students are my children and over a period of seventeen years I have had many hundreds of students who have come from every state in the Union and from far-off lands across the sea, and then after graduation have returned to carry the banner of professional optometry to new fields of endeavor.

I speak of professional optometry with no misgiving, for I have seen it develop from babyhood to manhood among the professions. Seventeen years ago an optometrist received only three months training before he hung out his shingle. His pre-optometrical education was never investigated nor questioned. Students came from all walks of life with every diversity of mental equipment and spent three months studying the rudiments of optometry.

Today a student must be a graduate of a recognized High School before he may enter the College and he now spends more time on each subject than was formerly spent on the complete course. Not until two years have passed may he attempt his State Board examination.

The study of optometry is now as scientific as any other professional study and it demands education, keen judgment and the strictest accuracy. To meet such demands, the Northern Illinois College has obtained the services of men, each one of whom is a master in the subject he teaches.

To all my students, past and present, I would say in closing, you are members of no mean profession. Study its principles diligently and practice its precepts ethically—until the last night falls.

The Diagnostic Value of Muscular Tone Indication A Guide for Comfortable Corrected Vision

By Dr. William Smith Dorchester, Mass.

FOREWORD

The following few cases, picked at random from my files, represent some real puzzlers in the practice of optometry. They are what were styled "grief cases" by some. Many reputations were made and many reputations were lost—for at least as those patients were concerned—as result of them. That the muscle tone plays an important part in the determination of the final prescription has been recognized for some time, but that this same tone is the disturbing factor in the proper adaptation of the prescription and the patient's comfort, is only becoming apparent in recent years. I will not attempt a theoretical explanation of this phenomenon, but will, instead, devote this thesis to a citation of several of these cases, and the reactions they made in the course of correction, which was, in some of them, attempted a few times, and each time along different lines.

———

Mr. M. A., age 54, has been wearing the same glasses for 7 years for near work. The prescription is plus 0.50 D. S. plus 0.25 D. Cyl. Axis 180 O. U. Prescribed by an Ophthalmologist. His habitual phoria (taken without correction both for P. R. & P. P. 13″ is 1° Exo. at P. R. and 15° Exo. at 13″. Uncorrected vision: O D. 20/20—O. S. 20/20.

The fundi and pupillary reflexes are normal. The ophthalmometer shows

O.D. X-O-42¼—X- 80—42¼
O.S. X-20-42 —X-110—42
Static Skiametry: O.D.+0.25—+0.50
O.S.+0.50—+0.50
Subjectively he takes O.D.+0.25—+0.50X180—20/20
O. S.+0.50—+0.50X 20—20/20
2° of Exophoria at distance
Add for presbyopia plus 2:50 O. U. (Checks up well with the cross cylinders)
15° Exophoria at near point 13″

I suspected that with the increase of the distance phoria upon the application of the lenses and with the high near point phoria, the patient might not be comfortable. Although he only desired the glasses for near use, I felt that he would be uncomfortable with them for too long a time. For this reason I decided to place the correction into a clinical frame and watch the reaction in my office. After reading for about 15 minutes Mr. M. A. reported that his eyes draw, and that the words blurred somewhat. I immediately reduced the prescription to a plus 3.00 S. O.U. and proceeded to watch results. With this prescription in clinical frame he was able to continue reading without discomfort for the remainder of the half hour—not minding that his eyes were fatigued from the first glasses. He reported to me one week later that he enjoyed the glasses very much and that he used them a good deal. I did not prescribe for distance, but if I do it will be a pair of plus .50 Cylinders. The spherical portion will be left out.

Why some men insist on making Hyperopic Astigmia a mixed condition is still one of the unsolved mysteries. The next case to be cited is one of this type.

Mrs. B. B., age 21. Housewife. Wears
O.D.—1.50 S—+2.00 C.X90
O. S.—1.50 S—+2.50 C.X90
Habitual phoria 2° Exo. at P.R.
taken without correction.
4° Exo. at 13″
Uncorrected V. A. O.D. 20/33-1/3
O. S. 20/40-at times making out 20/33-1/3+
Fundi: O.K.
Reflexes O.K.
Ophthalmometer O.D. X-0 40½—X- 90-45
O.S.X20 40¾—X-110-44½
Static Skiametry: O.D.+2.75 Cyl.X-90
O. S.+2.25 Cyl.X-110
Subjective RX. O.D. 2.50 Cyl.X- 90
O. S. 2.00 Cyl.X-110
P.R.Phorias—Orthophoria. 6-7° Exo.at 13 inches.

By introducing concave spheres, of similar strength as those in her old prescription, and gradually reducing them, the same phorias as found without the correction were noticed.

I checked this patient up a week later and was told that she is very comfortable with the glasses. Her vision with the prescription at the end of the examination was in each eye 20/25 plus, but after a week's use, became 20/20 in each eye.

The next case is that of boy 13 years old who was given a pair of —0.25 Spheres at a hospital, and, after wearing them for a month came to me for an examination. The usual symptoms of Asthenopia were present. In addition I noticed a variable Visual Acuity with each and both eyes. His acuity varied from 20/25 to 20/50 at the same time, uncorrected vision.

Uncorrected phorias. 3° Exo. at P.R.
4° Exo. at P.P.—13″

His fundi and pupillary reflexes were good. The ophthalmometer showed:

O.D. X— 0-42 —X—90-42½
O. S. X—165-42¼—X—90-42½

Static Skiametry—Minus Movements (against) suggesting Spasm.

Dynamic Skiametry—Tait method—+1.25D.S.+0.50 D.Cyl. O.U.

I kept his eyes under a 10D.S.,7°base-in prism and blue lens fog—O.U. for about 15 minutes. The 10 D.S. was to take care of his Amplitude of Acc., the 7° base in prisms to take care of his convergence, and the blue lenses were put there for the purpose of noticing the effect of blue

(Continued on page 16, Col. 2)

The Psycho-physical Aspect of Fusion

By Thomas Harrison Eames
Harvard University

Although fusion development is regarded as an optometrical problem it is essentially a process of learning. All learning occurs as the result of certain modifications of the structures of the cerebral cortex. Certain stimuli are encountered which cause nerve impulses to flow from one neuron to another, more specifically, from the terminal arborizations of one to the dendrites of another at places of contact called synapses. It is commonly believed that the synapse offers resistance to the neural impulses and that learning involves the breaking down of these resistances. The important point is that the synapses are selective in that they direct impulses over certain specific neurons instead of sending them out indiscriminately. There are many alternate pathways at a synapse and learning consists of influencing the pathway taken by the neural impulse. Each time an impulse is made to pass over a given pathway as a result of stimulation, certain neurobiotactic changes occur, the result of which is to lower the synaptic resistance for that particular pathway, and when stimulation occurs again, the neural impulse, following the line of least resistance, takes that course.

In fusion training certain charts are presented to the patient. They are constructed so as to stimulate the desire for singleness, as in the case of divided words and pictures. The cards provide the stimuli and the optometrist, by manipulating his instruments, assists the patient to obtain single binocular vision and then withdraws his assistance. He may insert antagonistic prisms in an attempt to call forth a greater response on the part of the patient. Each time fusion is gained, minute neural changes occur in the synaptic connections and the resistance is proportionately lessened. As the resistance diminishes the response grows in strength and a greater degree of antagonistic prism power can be overcome. After a certain period in each treatment improvement slows down and stops, and that marks the point where that particular treatment must end. The reason for this is assumed to be the accumulation of neuro-biochemical wastes occurring at the synapses as a result of neural activity, temporarily raising the resistance. As in other forms of learning there is an optimum practice period and the writer is collecting data with the intention of establishing what the length of this period should be for the average case. The optimum number of treatments per week is also being considered. Present indications suggest a period of from twenty to thirty minutes duration twice each week, but no definite statement can be made until the completion of the study.

The difference between the number of treatments required by different patients with approximately the same degree of defect was once regarded as being dependent on age, but this idea has given place to the impression that attention and individual differences are of greater importance. If a person is not attending he can not be taught and if his response mechanism is not active he can not be trained, hence attention is of great importance. The listless man of twenty requires more treatments than the alert man of fifty, regardless of the amplitude of accommodation of either. Individual differences in mental adaptability, as in other human traits, forms a normal distribution and most of us cluster about the median or mid-point. For such people the number of treatments required to overcome a given defect does not vary very much, but there is a great difference between the number required by a person who falls at one end of the distribution and the number required by one at the opposite end. Both vary from the normal, one requiring more treatments, the other less.

The notion that accommodation is all important in fusion development is in some way connected with the idea that people past middle age are too old to learn. This seems absurd when it is remembered that presbyopic patients progress about as rapidly as non-presbyopes. The presence of so many gray heads in graduate classes argues for the ability of the older person to undergo cerebral modification. If an individual can learn one thing at sixty he can learn another.

(Continued from page 15)

glass as a subduing agent in accommodative cases. I might mention here that I have been trying it out with many young hyperopes, and noticed a marked difference in my skiametric finding when the blue lens is in front of the eye. I do not prescribe it in the final prescription. I use the blue discs from my trial set. (As this method is purely experimental with me, I do not claim any positive results for it.)

Subjectively he accepted O.U.+0.50 Cyl. Axes 180—20/20 in each eye.

1° Exo.at P.R. and 6°Exo.at P.P.—13″ were the phorias in his case after the correction was made. A week later Orthophoria was noticed at P.R. and 7°Exo. at 13 inches.

In my practice I put a lot of faith in the phoria indications. I do not go into ductions and versions, as often as I should like to, simply because these take up a lot of time. In the average run of cases determination can nearly well be established by the manifestations of the muscle tone. I exert as much caution in cases with exophoria at distance, and high exophoria at near, as I do in the correction of myopia. From my practical experience, I learned that these cases, if given even moderately weak plus correction, trouble may be encountered. I have in my files cases of this nature, which came to me after being prescribed by some of Boston's leading ophthalmologists. In many instances the overcorrection was only about a quarter of a diopter. But as we well know that the ciliary muscle will seldom exert more than that amount, under ordinary conditions, the causes of the discomfort are readily seen.

Alumni Association

The nucleus for an N. I. C. alumni association was formed recently at a meeting held in the college auditorium, Dec. 5th, 1930. The meeting was instigated and finally brought about by Dr. H. Bylan of 7070 N. Clark St., Chicago. During the business part of the program, Dr. Bylan was made General Chairman of a committee to draw up the final plans for the formation of the association. The others on the committee are Dr. Geo. W. Regan, secretary, Dr. Harry Paul, Dr. John Ross, Dr. A. E. Norbury and Dr. J. Tischler. The committee is going ahead with the organization and the plans are to hold the next meeting during the Illinois State Convention, Feb. 8-10. Officers will be elected and a definite program decided upon at that time.

To date there has been considerable interest aroused as is evidenced by the comments received by Dr. Bylan. He would greatly appreciate the support of every alumnus who reads this. All interested would help Dr. Bylan greatly in his work if they would fill out and mail the accompanying blank to him.

Hedine claims that outside of school and studying he has found time to experiment on grafting Weed chains on banana skins.

Sponsel was absent from classes the other day. He claims he's been suffering from insomnia as he's been waking up in class lately with over 20 minutes to go.

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The Riding Academy

Ho, Ho, I get the yolk, said Wickstrom, as the morning hen fruit trickled down his shirt front.

Webber:—Do you neck?
Wrong, No:—That's my business.
Web.:—Oh, a professional.

J. Stephen Herzon sure must come from a frigid country. He thinks a wake is a cold meat party.

Moore:—Got bawled out by Occhy for something I didn't even do.
What was it?
Moore:—My questions.

Fair Frosh returning for reexamination:—Must I be examined all over again?
Winner:—No, just your eyes this time.

Occhy to Schipper:—The trouble with you is that you've got a diarrhea of words and a constipation of ideas.

Graydon claims that the red mark on his nose comes from his glasses—Glasses of what?

Macbeth has been taking up French, German, Spanish, Italian, Jewish and English outside of school. He runs an elevator in his spare time.

Clement still thinks the Acts of the Apostles is a vaudeville show.

Cowan:—Sweetheart, your eyes intoxicate me.
Miss Duval:—It must be my 'ighballs.

Deane:—My heart flames like a blazing fire!
Wrong No.:—Oh, don't be a fuel.

Labron:—I just can't seem to think on hot days.
Prof.: If it isn't the heat, it's the stupidity.

Berman:—Say Miss Walker, I know a patient that would give $5000 to see you.
Miss Walker:—Really, who is it?
Berman:—That man, he's been blind for 50 years.

Brindel:—What's the difference between castor oil and whiskey?
Stevens:—One's movie, the other's talkie.

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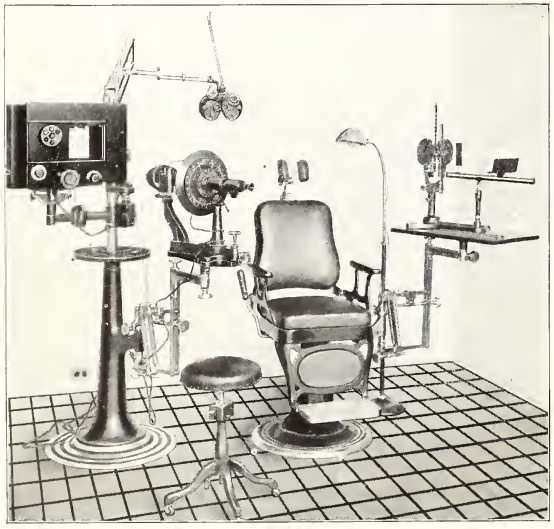

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